The Clean Power Plan: Impact on New Jersey

New Jersey Clean Air Council
Public Hearing – April 28, 2016

SUMMARY OF TESTIMONY† **PAGE**

†NOTE: Summaries are listed in order of speaker testimony. Speakers have either provided their own testimony summary, or have agreed to allow their testimony to be summarized by Clean Air Council staff.

The Clean Power Plan: Impact on New Jersey

John Giordano, Esq., Assistant Commissioner, Air Quality, Energy and Sustainability, New Jersey Department of Environmental Protection

As Assistant Commissioner for Air Quality, Energy and Sustainability, I want you to know how much I value the Council's input, and I want to extend my deep appreciation for its hard work, dedication, and sound advice over the years, and its continued focus on matters of utmost importance.

Today's topic is the Clean Power Plan (CPP), otherwise known as 111d, a rule which was partially adopted and partially proposed on August 3, 2015 by US Environmental Protection Agency (EPA). States are facing important challenges, considerations, and decisions when it comes to the CPP.

That said, New Jersey is one of 27 states appealing the CPP, and, in turn, we are not acquiescing to the EPA, and are currently not developing a Clean Power Plan. We are rather litigating the Agency's strategy that excludes New Jersey's successes at reducing carbon intensity from its power sector. My staff has provided links to our legal briefs, which explain it in detail.
I believe all of us ultimately want the same thing. We deeply care about New Jersey and its health and safety. As such, we at the state level must make sure that all regulatory mandates are reasonable, achievable, and based on sound science.

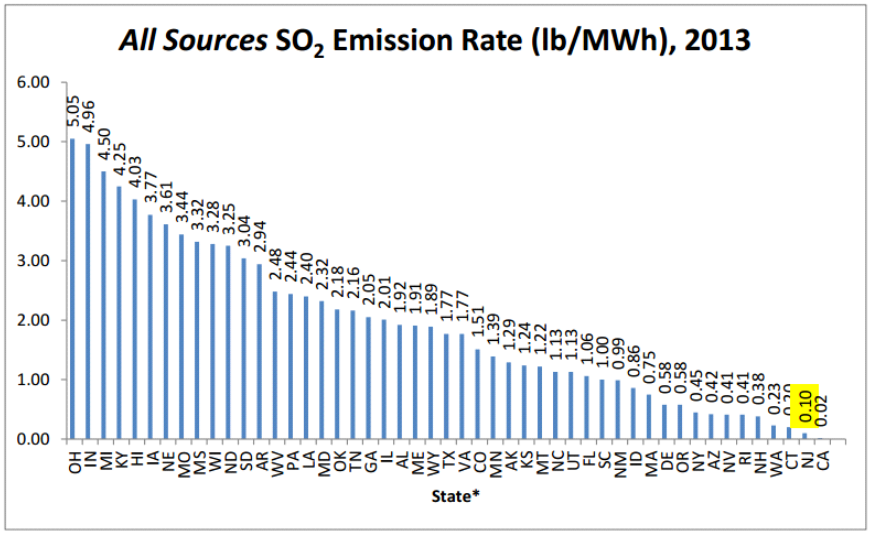
Currently, New Jersey is one of the lowest carbon emitters in the nation, and maintains one of the cleanest energy sectors. We've come a long way in successfully improving air quality, and we remain committed to continuing this legacy for future generations. Now, I'd like to show you a few slides that demonstrate our progress.

Emission Profile: NJ's Power Sector

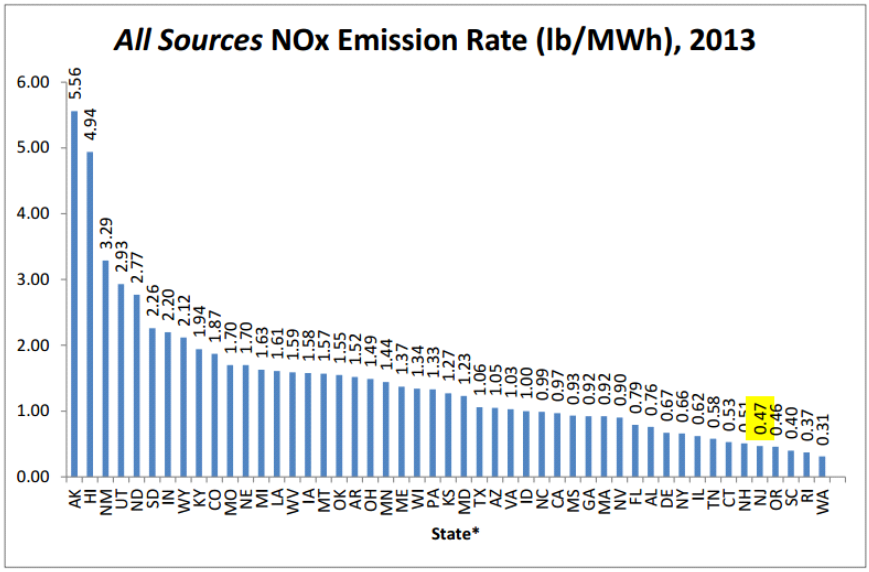
New Jersey's power sector has some of the lowest emission rates in the country.

Measured in lbs/MWhr, compared to other states, NJ is:

- 2nd lowest for Sulfur Dioxide
- 5th lowest for Nitrogen Oxides
- 5th lowest for Carbon Dioxide



*(Vermont excluded; limited power sector)
Source of Base Data: 2013 EIA State Historical Tables 1991-2013 (www.eia.gov/electricity/data/state); Emission Rate calculated as: (total emissions in Metric Tons/total generation in MWh) X 2,204.6 pounds/metric ton.



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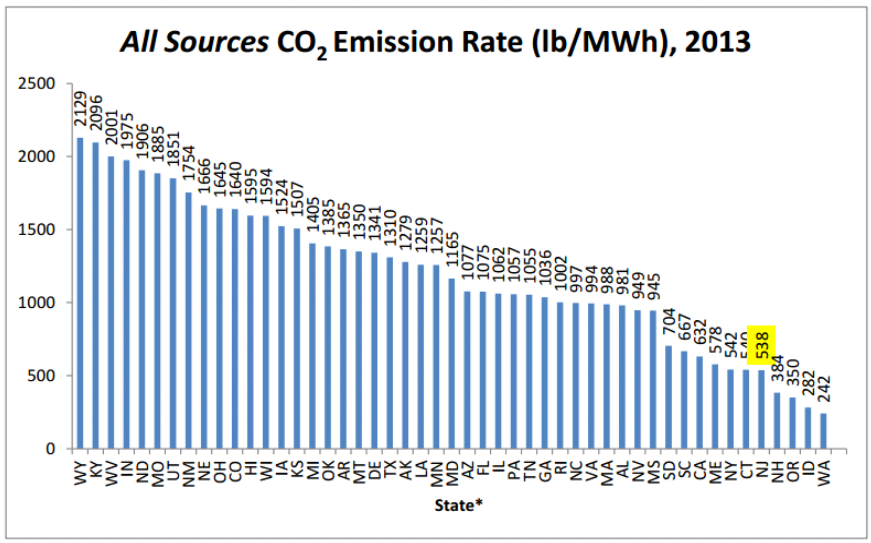

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Source of Base Data: 2013 EIA State Historical Tables 1991-2013 (www.eia.gov/electricity/data/state); Emission Rate calculated as: (total emissions in Metric Tons/total generation in MWh) X 2,204.6 pounds/metric ton.

In the interest of time, my technical staff has also made available a package of information that evaluates the CPP and provides additional information on New Jersey's progress in reducing air pollutants from our power plants.

One of the goals of our Energy Master Plan is to develop clean and renewable in-state electrical generation, and we are right now in the process of verifying new Energy Information Agency data that shows New Jersey is now a net exporter of electricity. This, in turn, further highlights our continuing efforts to displace upwind states' dirtier and less efficient power plants, and the Clean Power Plan fails to give us credit where credit is due. Market forces and rigorous planning through the Energy Master Plan are already taking us past the environmental benefits aspired to in the Clean Power Plan.

Here in New Jersey, striving for clean power is already in our DNA; we don't need EPA's re-engineering.

That said, we are not going to slow our progress toward cleaner, renewable, and efficient in-state power.

New Jersey Energy Master Plan Update

Richard Mroz, Esq., President, New Jersey Board of Public Utilities

INTRODUCTION

Good morning Chairman Dr. Richard E. Opiekun, Ph.D., and CAC members. I want to thank the Clean Air CAC for the opportunity this morning to address the members of the CAC about the State Energy Master Plan and its important role in the Christie Administration's overall efforts to make our state competitive and affordable, while improving the environment we live, work and do business.

I'd like to also recognize and thank today's other speakers for taking the time to be here today and for their efforts to improve New Jersey.

I am honored to be asked to speak today about the policies contained in the Christie Administration's 2011 Energy Master Plan ("EMP") and the 2015 EMP Update (EMP Update) which tracks the status of the implementation of the EMP policy recommendations and the positive impacts it's having on New Jersey and its residents and businesses.

I also want to provide some historical context and insight particularly into the history of the New Jersey fabric of public policy on energy and the environment prior to updating CAC members specifically on what New Jersey is doing now and planning for the future. More specifically, how the EMP policies and our actions in New Jersey might be supportive of the goals that you are advancing to support clean air. Therefore, I am also pleased to provide some context for how our energy policies interrelate to the policy issues around the CPP.

CHRISTIE ADMINISTRATION IS MOVING THE STATE FORWARD

The production and distribution of clean, reliable, safe, and sufficient supplies of energy is essential to New Jersey's economy and way of life. Energy is a vital tool of economic growth and job creation across New Jersey's entire economy. Economic growth depends on abundant, affordable supplies of energy. And it's no secret that when considering where to locate or expand a business, often energy costs rank high in factors to consider.

The Administration has stemmed the tide of anti-growth, anti-job policies and we've turned the tide in the right direction. The Unemployment Insurance Trust Fund has been brought back into solvency two years before predicted. And just two weeks ago Governor Christie announced that the fund has a positive balance of $1 billion; saving businesses $213 Million in federal taxes.

Under the New Jersey Economic Opportunity Act, Grow NJ and the Economic Redevelopment and Growth (ERG) Program, approximately 319 companies have used various economic development assistance programs to generate or retaining more than 82,000 jobs and bring more than $12 Billion dollars in total public-private investment to the Garden State.

And the Administration's work together is showing itself in very real, positive ways too, with strong job growth and progress in our state's economy as a whole. New Jersey is experiencing its strongest private sector employment growth in 15 years and has seen six consecutive years of private sector job growth. In fact, private sector employers added 17,300 jobs in March 2016 alone and 78,800 new jobs since March 2015. In total, the private sector has added 265,000 jobs since Governor Christie took office in 2010.

The number of New Jersey residents reporting to have jobs again reached an all-time high in March, climbing to a historic level of 4,378,500 after hitting a record just the month before. And the state's unemployment rate fell to 4.4 percent in March 2016, which is down 1.8 percentage points over March 2015 and remains well below the national rate. The unemployment rate has plunged 5.4 points since when the Governor took office; from a high of 9.8 percent in January 2010.
The Garden State's labor participation rate continues to climb and outpace the national rate, 64.3 percent to 63 percent in March. And perhaps most importantly, 113,000 more people reported being employed in March 2016 than in March 2015, according to BLS household survey data.

The work has not been easy. The Governor has had to act decisively to bring the State's budget back into balance – and address $13 Billion in combined projected deficits in the first 18 months of the administration. And as we have all seen, the Governor put in motion a series of measures to restore fiscal sanity, rein in the cost of government to protect New Jersey taxpayers and create a more welcoming environment for business and economic growth.

BPU & EMP

The Board of Public Utilities (Board) has a significant part in the Christie Administration's efforts to make our state competitive and affordable when it comes to the provision and cost of

utility service. In December 2011, Governor Chris Christie released the 2011 Energy Master Plan and, in doing so, the Governor asserted that the production and distribution of clean, reliable, safe, and sufficient supply of energy is essential to New Jersey's economy and way of life.

The EMP outlines the State's strategic vision for the use, management, and development of energy in New Jersey over the next decade. It further serves as a guide to the present and future energy needs of the State. The EMP Update released in December 2015 is only an update to the 2011 Energy Master Plan (2011 EMP); not a rewrite of the 2011 EMP.

The 2011 EMP has guided both the Administration and private-sector decision makers through a period of economic challenge and has provided long-term goals and implementation strategies flexible enough to respond to market changes and new information about the relative merit of competing energy technologies and strategies.

As the Chairman of the cabinet level committee that assembled to review the EMP for an update, I can report that I had this perspective very much in my sights as we undertook our consideration of the EMP Update.

With this context, I along with my colleagues on the EMP Committee understood the significance of these industries to the economy broadly, to financial issues generally and that both the costs and benefits including financial, environmental and social are compelling to the Christie Administration. And this perspective is reflected in the EMP and EMP Update.

The EMP and the EMP Update provide a strategic vision for the use, management, and development of energy in New Jersey over this decade. The five overarching goals and 31 specific recommendations in the 2011 EMP focus on both initiatives and mechanisms which set forth energy policy to drive the state's economy forward. But the EMP also keeps a keen focus on maintaining New Jersey's strong commitment to preserving and protecting the environment.

Among other things, the EMP Update measures the State's progress toward achieving the five overarching goals contained in the 2011 EMP. They are:

1. Drive Down the Cost of Energy For All Customers
2. Promote a Diverse Portfolio of New, Clean, In-State Generation
3. Reward Energy Efficiency and Energy Conservation and Reduce Peak Demand
4. Capitalize on Emerging Technologies for Transportation and Power Production
5. Maintain Support for the Renewable Energy Portfolio Standard

The Update provides adjustments to some of the 31 recommendations in light of changed circumstances. One needs to only look back to the 2008 Energy Master Plan to see the importance of regularly revisiting and updating the State's EMP. The 2008 EMP warned that natural gas was in short supply and three times the cost of coal, contributing to much higher costs for both electric and heating customers, and therefore overlooked the opportunity offered by natural gas to reduce harmful emissions. By 2011, however, the energy landscape had

significantly changed. The United States had become a dominant producer of natural gas, driving down electric and heating prices for consumers.

As you all know, since the release of the 2011 EMP, New Jersey suffered devastating damage from the impacts of Superstorm Sandy and other major storms and weather events.

Superstorm Sandy was the most devastating storm in the history of our state. Sandy caused extensive damage to New Jersey's energy infrastructure, disrupting delivery of electricity, petroleum, and natural gas to consumers across the State. As we continue to move forward three years after Sandy, let's not forget why it is critically important to rebuild stronger and smarter.

About Three and a half years ago 71% of New Jersey's electric distribution systems were impacted causing 2.8 million New Jersey customers to be left without power. Superstorm Sandy downed 9,441 utility poles, left more than 100 transmission lines out of service, and damaged or flooded more than 4,000 transformers statewide. The restoration effort took more than 17,000 crew workers, coming from across the country, and working around the clock to complete full restoration of power in 14 days.

In the natural gas distribution network statewide - approximately 39,000 customers were without service and the gas companies made over 171,000 service assessments at homes and businesses to ensure safety. The Christie Administration made it a priority to improve energy resiliency, and emergency preparedness and response.

Therefore, comments were sought and recommendations made in this new section are based on "New Jersey's Plan for Action" in the aftermath of Superstorm Sandy. This new EMP section will cover areas of: protecting critical energy infrastructure, improving the Electric Distribution Companies ("EDC") emergency preparedness and response, increasing the use of microgrid technologies and applications for distributed energy resources (DER), and creation of long-term financing for resiliency measures such as the Energy Resiliency Bank.

These resiliency improvements to the energy infrastructure include, among many others measures, the raising and/or rebuilding electrical switching stations and substations, adding higher voltage lines on stronger poles, the replacement of miles of gas distribution pipes and service lines.

A significant portion of these upgrades are termed distribution automation or smart grid. The latest report released by Gridwise Alliance ranks New Jersey 9th in grid modernization operations. This is actually the technology implemented for smart grid, but we have a way to go to make the grid smarter. Smart grid and gas supply infrastructure upgrades enables the energy to be delivered to the customer in a more efficiently with less losses in transmission and distribution. It also furthers the expansion of technologies such as CHP and renewables like solar.

From the beginning of the EMP Update process we were clear that the update was not intended as a development of a new EMP with revised goals. Throughout the process the EMP Update

was intended to bring the implementation status of the EMP goals up-to-date and to add those new energy issues in response to Superstorm Sandy.

While most comments submitted were important energy issues, some were not relevant to this EMP Update. Those comments were not in line with the purpose of the EMP Update; to report on the status of the 2011 EMP goals and potential adjustments to the 31 recommendations for achieving those goals. Still some commentators suggested a total rewrite of the 2011 EMP as they opposed policies as contained in the EMP.

For instance, some commentators opposed policies contained in the 2011 EMP, such as the State's support of energy infrastructure improvements, including natural gas pipelines that allow ratepayers to take advantage of cleaner, low cost energy. While energy and the environment are intertwined, the energy component is broader than just the environmental issues and must include the balance of reliable, reasonable and equal access to energy by all customers, residential, commercial and industrial.

Throughout the EMP Update process the Christie Administration was committed to making sure that stakeholders and the public had the opportunity to provide input. To hear comments of interested parties on the 2011 EMP's five major goals and 31 policy recommendations, as well as a new area with regard to improving energy resiliency, I presided over the three public hearings held in August 2015. A total of eighty-two (82) individuals commented at the hearings and 1,093 written comments were received and reviewed before we issued the Draft EMP Update for additional public comment; we received comments from 31 parties or organizations.

2015 UPDATE - EMP GOALS

I believe that the EMP Update is a good product of our efforts and tells a very good story about energy in the Garden State. New Jersey has made good progress towards the five overarching goals and many of the 31 policy recommendations contained in the 2011 EMP. Overall New Jersey has lower energy costs, while at the same time advancing energy efficiency, demand response and renewable energy. The State has fallen from a high energy cost state to a range that falls within the national average for total energy costs (electricity, natural gas, fuel oil and gasoline).

Since the issuance of the 2011 EMP, electricity prices in New Jersey had fallen by approximately 8 percent for residents and small business in past years. Recently, residential retail electricity prices are down on average about 4% from 2011 and large and mid-sizes business that shop for their electricity probably have experienced even steeper declines in prices. The state has dropped from having the fourth highest electricity cost in the nation to tenth.

This is progress, but it is not enough. We continue to pursue measures that will help drive down prices even further, especially because future costs associated with building significant new transmission infrastructure, which are approved at the federal level and out of the State's control, have and will continue place upward pressure on prices.

The current vibrant and robust natural gas infrastructure in New Jersey has allowed residents and businesses to take advantage of low costs of natural gas prices; helped to moderate energy prices overall in New Jersey; and has the potential to increase economic development in the State; all while encouraging a fuel source with lower emissions from generation or use.

FINANCIAL BENEFITS OF LOWER COST NATURAL GAS

Today, New Jersey's natural gas prices are among the lowest in the country. According to Energy Information Administration, the average price of natural gas delivered to residential customers fell approximately 45% from a high of $15.21 per thousand cubic feet in 2008 to $8.37 in 2015. Prices in our state were the 17th highest in the nation in 2011; today we rank amongst the least expensive states in the country with a December 2015 average monthly price of $7.85 per thousand cubic feet. This huge decrease was anticipated in the 2011 EMP and has been critical to successfully reducing the cost of electricity and improving the environmental performance of New Jersey's electric generation.

The State's commitment to actively promote new natural gas fueled electric generation and the enhancement and expansion of the natural gas transmission and distribution system, has helped to reduce energy costs and emissions. Over the past several years, New Jersey has benefitted from the enhancement and expansion of its natural gas transmission and distribution systems. Expanding and upgrading the natural gas interstate and intrastate pipelines help to further lower the cost of energy to New Jersey's homeowners and businesses and reduce emissions.

LOWER METHANE EMISSIONS

In the last seven years, the Board has approved 17 gas infrastructure replacement, upgrade and mitigation plans sought by the Gas Distribution Companies ("GDCs"). The GDCs initial filings sought infrastructure upgrades totaling over $4.4 billion. After its review, the Board reduced and approved infrastructure upgrades worth a total of $2.23 billion. An additional $280 million in proposed projects are pending before the Board. The pipeline replacement projects already approved by the BPU will reduce methane emissions from leakage.

In November 2015, the Board approved PSE&G's) Gas System Modernization Program to replace up to 510 miles of aging gas main infrastructure to improve reliability and reduce Methane emissions. In doing so, PSE&G will use data on methane emissions from the Environmental Defense Fund (EDF) in prioritizing this work. EDF partnered with Google and Colorado State University on a program to detect, map, and quantify methane emissions from natural gas distribution systems quickly and cost-effectively, using new mapping and analytical methods. The organization spent six months surveying portions of PSE&G's service territory being targeted for replacement under the utility's Gas System Modernization Program.

DIVERSE MIX OF GENERATION

The EMP does admittedly rely upon lower cost natural gas for generation as well as to reduce emissions from generation. However, the EMP also recognizes the strength of a diverse portfolio of generation. In 2014, New Jersey had a generation portfolio that was 46.2% natural gas; 46.3% nuclear; 3.2% renewable, only 3.7% coal and .5% from other.
So the State's electric energy resources are diverse and clean. New Jersey was recently ranked among the 5 states with the lowest emissions from electric generation despite being the 22nd largest electricity generating state. This is a direct result of the state's current resource mix of nuclear, natural gas and renewables.

New Jersey is ranked 3rd lowest in sulfur dioxide (SO_2) emissions, and 5th lowest in carbon dioxide (CO_2) and nitrogen oxides (NOx) emissions.

According to recently released 2015 data from the federal Energy Information Administration (EIA), NJ became a net exporter of electricity in 2015. The change is so dramatic we are double checking the EIA data. If it is correct, and we expect it to be, New Jersey has achieved one of the goals of the Energy Master Plan - not relying on out-of-state electricity generation from higher emitting coal fired power plants.

Without New Jersey's investments in energy efficiency and renewable energy, and efforts to develop clean new in-state generation this would not have been possible.
EMP and Renewable Energy & Energy Efficiency

Through the EMP Update, we can also report that New Jersey continues to meet its progress toward our renewable energy portfolio standard as nearly 15% of the retail electricity supply comes from renewable sources; with solar accounting for almost 3% of the in-state generation mix this energy year.

New Jersey is fourth in deployed solar in the country and recently surpassed 1.6 GW of installed capacity. The EMP strongly supported the development of solar energy, which is evident by the fact that ninety-two percent of the 1.6 GW of total solar capacity was installed during the Christie Administration. Of significance, New Jersey has invested $ 2.4 billion in all renewable energy. This includes the former solar rebates of $363 million and since the implementation of SREC market New Jersey has invested $1.6 billion to pay for them to incentivize solar development. So to be clear, New Jersey's ratepayers have invested $2 billion just in solar since 2001.

Our commitment to Energy Efficiency is equally as compelling. In the last 15 years, New Jersey has invested $2.4 billion in energy efficiency. This includes almost $1.7 billion invested by ratepayers through New Jersey's Clean Energy Program, of which $900 million has been invested during the Christie Administration. And over those 15 years the Board has authorized the EDCs and GDCs to invest $727 million in energy efficiency programs.

Through the New Jersey Clean Energy Program's energy efficiency offerings over these years, New Jersey has saved 4.66 Million MWh of electricity and 80 Million therms of natural gas

savings (between 2001 – FY 2014). This has resulted in 860 MW of Peak Demand Reduction (between 2001 - FY 2014).

On average, the Clean Energy Program results in saving of 320,000 MWh (320,000,000 kWh) of electricity annually. Over 15 years the compounded energy savings have been 27.5 million MWh (27. billion kWh). That is enough energy savings to power 3.1 million homes. The effect of saving approximately 4.66 million MWh less of electricity that needs to be generated, transmitted and distributed to customers this year results in savings to the customers – but also to reduced demands for generation regardless of the fuel source and any resulting emissions there from.
The positive impact of these energy efficiency and renewable energy investments on air quality have been substantial. New Jersey's Clean Energy Program's total investments alone in energy efficiency and renewable energy have resulted in a cumulative lifetime reduction of 80,816,464 metric tons of carbon dioxide (CO_2), 239,050 metrics tons of nitrogen oxides (NOx), 252,211 metric tons of sulfur dioxide (SO_2) and 3,170 pounds of mercury (Hg).

This means that all of the energy efficiency measures and solar installed through the Clean Energy Program will result in over 80 million metric tons of avoided CO_2 reductions at the current emission rate over the lifetime of the measure we helped to install – this is significant.

EMP AND THE CPP

Given the diverse generation and energy portfolio that I have just outlined, the significant investments I reference in energy efficiency and renewable energy, the commitment that this state has to nuclear energy as a near zero emission generating source, and the focus and investment in infrastructure to use lower cost lower carbon natural gas – I am confounded that the CPP as it was proposed virtually ignores the people of New Jersey for the investments they have made.

The CPP did not give credit to our nuclear generation; did not provide any credit for the renewable energy deployed – despite the fact that New Jersey is the fourth highest state in deployed solar; does not provide credit for the billions we have invested in energy efficiency and renewable energy; and would not recognize the types of investments with cleaner natural gas.

These are just a few of the general reasons that this Administration has challenged the CPP.

And there is another issue in the context of the CPP of which I want to make mention. Though it is not necessarily a policy issue that directly confronts this CAC or the matters related to its particular mission of considering air quality - I believe it is worth mentioning as it affects me as the chief state energy policy official and chairman of the EMP Committee – and which should trouble you as state officials.

One of the underlying concerns of the CPP was that a federal government regulatory agency which has jurisdiction of federal air laws had seen fit to intrude on the prerogative of state officials in the conduct of state energy policy. Indeed, this became clear to me during the

deliberations of the EMP Committee and my work as its chairman. During that process I was troubled by the impending CPP rule to potentially constrain my opinions, as a state official, on the EMP. And I was further troubled that the proposed rule could have very well been used to compel the legislature and Governor to comply with a federal government regulation on this State's energy issues.

Like many of my colleagues in other states that have the responsibility for implementing state energy policies – I, therefore, supported the legal challenge to the EPA promulgation of the CPP. I along with other state utility regulators and energy officials filed certifications to the legal challenges to the rule promulgation as being an unconstitutional intrusion by the federal government on states' rights.

ADVANCING THE EMP GOALS & RECOMMENDATIONS

We will now of course accept the rule of law and final decisions of the courts. If the CPP were to be upheld, I along with my colleagues such as Commissioner Martin would then need to determine how compliance might be accomplished. Regardless, I believe that the path outlined in the EMP provides a foundation that would continue to serve our energy needs and might provide an equally strong foundation for compliance with such regulatory regime especially in light of the balanced portfolio of generation I mentioned and the investments we have made and would continue to make in areas such as energy efficiency and renewable energy.

So now I want to highlight how we will advance the EMP goals and recommendations.

With our focus on the EMP goal of Continuing to Drive Down Costs we will keep the perspective that we must have a diverse portfolio of generation and distribution; take advantage of low cost sources such as natural gas; and build new in-state generation.

To continue progress on the EMP goal of developing New Clean In-State Generation the State we will continue to rely on nuclear, natural gas, solar and other renewables. Over 2,000 megawatts (MW) of new Combined Cycle Natural Gas base-load generation has been built already in the last 5 years and we have expressions of interest of more being built.

We will expand Combined Heat and Power (CHP) and Distributed Generation (DG). Currently new Jersey has approximately 100 MW of CHP and 1,300 MW of DG including CHP, fuels cells, biomass, landfill gas, wind and solar.

We will continue to promote new or expanded pipeline development as long as they are safely and responsibly aligned, permitted, operated and maintained.

We continue to promote solar projects on landfills and brownfields and maintain the State's commitment to wind resources in the future. And the EMP continues to support emerging technologies such as biomass, storage and fuel cells.

In the areas of the EMP goal of Cost Effective Conservation and Energy Efficiency, New Jersey's Department of Community Affairs recently adopted higher energy efficiency codes. Therefore, The Board's Division of Energy Policy & Emerging Technologies and its Office of Clean Energy are engaging the new program manager and initiating energy efficiency baseline studies to adjust program qualifications that take into consideration those higher energy efficiency codes. We will work with our colleagues at DCA and local officials for the implementation of the new enhanced energy efficient building codes.

We will also rationalize the energy efficiency programs that the Board administers with the programs run by the Electric Distribution Companies (EDCs) and Gas Distribution Companies (GDCs) to ensure the Garden State receives the highest energy efficiency results possible for ratepayers' investments.

We will continue to promote energy efficiency and demand response and will monitor the PJM Demand Response Programs.

Regarding the EMP's Emerging Technologies for Transportation and Energy Production goal, we are working with New Jersey Department of Environmental Protection (DEP) on an enhanced Alternative Fuel Vehicle program and seek to advance emerging technologies and initiatives such as the development and expanded use of micro-grids and other distributed generation resources, such as the Transit Grid at NJ Transit.
Related to the EMP Update new area of Improving Infrastructure Resiliency & Preparedness, the Board will continue its efforts with the EDCs to ensure storm response as was incorporated in prior Board orders. And we will continue a particular focus on EDC grid hardening investments.

Also, we will be engaging with the EDCs to seek specific plans for Distribution Automation upgrades and elicit their future plans for Smart Grid and AMI deployment to ensure the infrastructure is available as end use technology develops for use in a building or home to better manage energy or utility systems.

We will also continue to consider long term incentives for resiliency such as through the ERB.

CONCLUSION

We have made much progress on the implementation status of the goals within the 2011 Energy Master Plan, but there is always room for improvement. The EMP Update has been a pursuit to identify and implement improvements that move the State toward achievement of our energy goals, while protecting our environment. The EMP takes stock of our successes – but we note the many challenges still to confront in these areas.

As we move forward in implementing the recommendations in the EMP and EMP Update, we will be engaging the industry, convening stakeholders, and deliberating on next steps.

This Christie Administration is working hard to confront many challenges – whether with budgets, with taxes, infrastructure investments, or burdensome regulation – to ensure that New

Jersey remains viable and competitive in its economy and as a place to live and work and do business. I am proud that I and the Board are part of such worthy efforts.

Thank you for having me here today to offer my comments.

Keep Context in Mind in Clean Power Plan Compliance Planning

Kenneth Colburn, MBA, M.Ed., Principal, Regulatory Assistance Project

The substance of Ken Colburn's presentation reinforced its title, Keep Context in Mind in Clean Power Plan Compliance Planning. Colburn, a former state air regulator, noted that the federal Clean Air Act (CAA) sometimes leaves "no good deed unpunished." This may describe the compliance obligation imposed on New Jersey by the Clean Power Plan (CPP) despite its early efforts to reduce power sector emissions. Even without the CPP, however, today is a particularly challenging time for the sector, because there is no historical precedent to the technological and environmental change facing the industry. Such conditions raise the risk of reaching poor decisions, and could easily lead to stranded costs.

Colburn stressed that the CPP reflects an energy optimization challenge, and optimization requires an appreciation of both power sector trends and clear state energy goals and priorities. Without these prerequisites, states risk putting "the cart before the horse" by diving directly into CPP planning. Fortunately, New Jersey is a step ahead, having already developed and regularly updated its Energy Master Plan. Similarly, rather than basing CPP planning on the current status quo, states would be well advised to anticipate ways the power sector will change over the CPP compliance period. Doing so will allow them to "skate to where the puck is going to be" rather than "where it is today." One likely change, for instance, is that federal air quality standards for ozone, particulates, regional haze, toxic compounds, and other pollutants will be reviewed as required by the CAA and potentially made more stringent. Going forward, integrating energy and air quality planning comprehensively on a multi-pollutant basis incorporating cost, reliability and other constraints is likely to lead to superior outcomes than maintaining regulators' historical separation of powers and addressing one pollutant at a time.

As daunting as these challenges are, even bigger ones lie in the uncertainties associated with the CPP's judicial fate, what administration changes may occur as a result of the 2016 presidential election, how electricity markets will be affected by new technologies, increasing risks of extreme weather events, etc. Given these risks, identifying CPP scenarios that perform "least badly" in all cases may be a wise approach to planning.

Colburn proceeded to offer insights for the Clean Air CAC on the specific CPP issues it had raised in its hearing announcement. He then elaborated on several of the forces that make power system planning uncommonly difficult today. These include the fact that for 100 years we have only been able to manage electricity supply to meet demand, but now we can aggregate and manage electricity demand. This is likely to result in the development of genuine markets, raising questions about the future of the regulatory compact and even the role of regulators. In addition, the industry has maintained – and ratepayers have paid for – substantial investments to

meet rare peak conditions. These assets remain idle the rest the time. Uber and AirBnB enabled owners to monetize their unused capital assets (cars and bedrooms) instead of purchasing "centrally supplied" alternatives; will similar competitors arise in the power sector?

As further evidence, Colburn noted the ratio of electricity use to GDP growth has inverted (it is now less than one), and the Energy Information Administration projects an increase in electricity use of only 0.8% this year. This is in part due to cheap and available natural gas, but gas is less than one-third the cause as measured against declining carbon dioxide emissions. Increases in energy efficiency and renewable energy account for the lion's share. These developments elevate the risk of overbuilding natural gas generation infrastructure (power plants and pipelines); such investments may become stranded costs before they are fully recovered from rate payers.

New Jersey is already a national leader in renewable energy (#4 in solar capacity, for instance). The price of renewable energy has declined markedly, and it is at or close to grid parity with fossil fuel options. Even it, however, is expensive compared to energy efficiency, and New Jersey remains out of the running for national leadership on this front. Several states have determined that energy efficiency provides the cheapest, cleanest, and most reliable means of meeting future electricity demand. Despite years of aggressively pursuing energy efficiency, even more opportunity has been identified. The best states are saving about three times more energy annually than New Jersey is. Rectifying this situation would go a long way toward improving New Jersey's economy, creating more jobs, and complying with the CPP.
Colburn closed by reflecting back to the Energy Master Plan, and suggesting that in light of today's planning complexities, some of its priorities might be shifted to favor options that provide lower-risk, lower-cost "least bad" outcomes across a variety of futures.

The Clean Power Plan: A Path Forward for New Jersey

Jackson Morris, M.S., Director, Eastern Energy Project, Natural Resources Defense CAC

M.J. Bradley & Associates, in collaboration with several utilities, trade associations and NGOs, including the Natural Resources Defense CAC, is undergoing a comprehensive modeling analysis of the Environmental Protection Agency's final Clean Power Plan. Using the IPM model, the initiative has studied more than a dozen compliance scenarios for the entire U.S. - modeling the impact of trading restrictions, regulatory approaches, energy efficiency investments, gas prices, and the ITC/PTC extension.

Preliminary analysis for New Jersey confirms that the Clean Power Plan is achievable for the state at minimal cost for both the state and consumers, with broader trading resulting in greater benefits and cost reductions for the state and mid-Atlantic region. The modeling highlights that a mass-based approach that covers both existing and new sources produces the lowest carbon and co-pollutant emissions, resulting in greater public health and consumer benefits. Under a plan that covers all sources, the state could see annual health savings of up to $118 million per year by 2030. In addition, increasing energy efficiency savings in the state drives reductions in pollutants, wholesale prices, customer bills, and overall compliance costs. Achieving 1% annual

savings would reduce customers' bills by 2% compared to BAU without the CPP, while ramping up to 2% annual savings would reduce customers' bills by 8% compared to BAU."

CPP: Opportunities and Tripwires
Steven Gabel, M.A., President, Gabel Associates

- My background: Economist with 36 years of experience in the energy industry. President of Gabel Associates, a New Jersey based firm that provides analysis and advice in wholesale and retail energy markets including extensive work with the Clean Power Plan (CPP), the Regional Greenhouse Gas Initiative (RGGI), PJM, and generation project development.

- Currently assisting client, the Independent Energy Producers of New Jersey (IEPNJ), on CPP issues. IEPNJ is a trade association representing the wholesale power generation industry in New Jersey. IEPNJ was founded in 1992 and represents companies that own or operate over 80% of New Jersey's bulk generation capacity.

- On behalf of IEPNJ, we have participated in a series of meetings with individual generation members and the New Jersey Department of Environmental Protection (DEP) staff to assess the CPP rule and identify key issues so that, in the event the rule moves forward, DEP can proceed in an effective manner. Discussions have been very collegial and helpful to us in understanding DEP's process and views. We hope it has been beneficial to DEP as well.

- There is a high degree of flux and uncertainty in the CPP process including legal, electoral, and marketplace. Flexibility is important.

- The rule as adopted is highly complex and all stakeholders continue to review, analyze, and develop views and approaches.

- The rule presents New Jersey (and the nation) with a solid opportunity to: a) promote cleaner resources, such as renewable generation and energy efficiency, in a market-based approach; and b) reduce air emissions -- not just CO_2 -- but also other pollutants such as NOx, SO_2, Hg, and PM. Even if one doubts climate change, the rule presents opportunities that should not be overlooked.

- New Jersey has done much to support stabilizing electric rates and promoting new, clean generation – properly implemented, this rule can supplement these efforts and help advance the goals of the Energy Master Plan (EMP).

- Understanding the dynamics of wholesale power markets is critical to effective implementation.

    - Energy markets: day-ahead and real-time markets are highly competitive. Imposing risk on offer price-setting should be avoided.

- Capacity markets: the market was restructured in August 2015 and imposes significant and unprecedented risk on generators.

- A key compliance decision by DEP is the appropriate compliance pathway to pursue: mass-based or rate-based. This determination should take these economic considerations into account.

  - Compatibility with approaches taken by other states should be a consideration when selecting New Jersey's compliance option. Currently, New Jersey can only trade with states that have taken the same compliance approach. Trading creates market efficiency, reduces compliance costs, and provides market liquidity.

Other Key Issues:

  - Promoting energy efficiency especially in low-income communities: the rule includes the Clean Energy Incentive Program (CEIP), which includes extra incentive for low-income municipalities. To promote program success, DEP should ask EPA to: a) allow wide participation including community organizations, utilities, third party vendors, and others (who otherwise meet the measurement and verification (M&V) criteria) to participate; and b) define a low-income community as a municipality with a minimum of 15% of its residents at or below the poverty level. Based on a review of demographic data, this sets an appropriate cut-off point. In addition, energy efficiency programs for any building in a low-income community should be eligible, not just programs for residential customers.

  - If a rate-based approach is considered, careful review and analysis of the ERC supply should be undertaken around each category of ERC generation (gas shift ERCs, renewable energy ERCs, energy efficiency ERCs, and CHP ERCs), as each carries complications and risk of not materializing.

  - If a mass-based approach is chosen, an important consideration is how to allocate allowances, such as an auction, allocation by historic output, or other structures. Each option presents opportunities to further state efforts in clean energy, renewables, or to provide revenue support.
  - If the rule moves forward, New Jersey should develop a State Plan and not rely on the Federal Implementation Plan (FIP).

  - I look forward to working with you as issues and the legal pathway become more defined.

Clean Power Plan: Full Steam Ahead on Compliance

Pam Kiely, Senior Director of Regulatory Strategy, Environmental Defense Fund

The Clean Power Plan will put an end to the era of unlimited carbon dioxide emissions from the nation's fossil fuel-fired power plants by creating consistent national emissions standards for

sources that are responsible for nearly forty percent of the nation's carbon pollution. These standards will lead to a safer climate, improve public health, reduce customer bills, and create economic opportunities. Traditional regulatory approaches – coupled with guidance and tools provided in the Clean Power Plan itself – can help the states reach this goal.

Partnering with States

The Clean Power Plan's health and environmental protections are groundbreaking, but its structure follows the traditional Clean Air Act framework of "cooperative federalism"—or partnership between EPA and the states—that has been reducing emissions of dangerous pollutants for decades. Under the Clean Power Plan, EPA has established separate national emission standards for coal-fired steam power plants and natural gas combustion turbines. States, in turn, have tremendous flexibility to design individualized state compliance frameworks to ensure that the power plants within their jurisdictions achieve these emissions limits—as long as they provide a clear, enforceable emissions limit for each regulated power plant in the state.

Enhanced Flexibility: Leveraging Traditional Tools

Traditional emissions-limit approaches provide power companies with significant flexibility, allowing averaging and trading of compliance credits among facilities as well as recognizing pollution reductions secured by energy efficiency, renewable energy, and other measures. This streamlined and cost-effective approach has already been demonstrated under the Clean Air Act. EPA has also provided resources to facilitate flexible compliance, such as guidance for states to develop mutually compatible plans that will enable power companies to trade compliance credits with each other across state lines and further reduce the costs of compliance. we

Prudent Planning: States and Power Companies Moving Ahead

After the unprecedented decision by the Supreme Court issuing a "stay" of the Clean Power Plan, states across the country have prudently chosen to keep moving forward with compliance planning and stakeholder engagement, and power companies continue to make the types of investments needed to position themselves for compliance with enforceable carbon emissions limits beginning in 2022. Not wanting to be caught flat-footed, and recognizing that those making investments in the power sector benefit from enhanced regulatory certainty, twenty-five states across the country –states opposed to the Clean Power Plan as well as states strongly supportive—have affirmed plans to continue planning for compliance or to continue to secure carbon reductions from the power sector.

http://www.powermag.com/briefs-states-act-on-epa-clean-power-plan-measures-despite-uncertainty/

The Clean Power Plan: Avoiding Emissions and Economic Leakage

Dave Forsyth, Regional Energy Manager, Gerdau Long Steel North America

When discussing the impacts of the EPA Clean Power rule what is often lost is who is going to pay for this and what impact will it have on the industrial customers in a jurisdiction?

We can't argue with a goal to improve the environment. In fact, because Gerdau is both Energy Intensive and Trade Exposed (EITE) we have been focused on ways to reduce energy and

therefore emissions for many years. In a study commissioned by the DOE a few years ago, the U.S. steel industry was found to be the global leader in Energy Efficiency. If you want to make clean steel, you should make it here!

We must understand the EITE concept. “Energy Intensive” is pretty easy to understand; you can’t melt a car and turn it into a new steel product without using a lot of energy no matter how efficient you are. “Trade exposed” is a key concept to comprehend because it leads to understanding leakage of emissions and economic contributions; an outcome we obviously want to avoid in New Jersey. Since our product is traded globally, as so many commodity type products are, if we experience costs that our competitors do not, then we sell less of our product and they sell more. This outcome or “leakage” is precisely what we want to avoid because it’s a lose - lose for the environment and the economy. Imagine the emissions involved in shipping scrap from North America, across the ocean to Turkey or China, utilizing high Carbon content electricity to produce the product and then the CO_2 associated with the return shipping. This is leakage and we should not create policies that encourage this practice.

A State Implementation Plan must be designed to prevent leakage and not increase cost to manufacturers that their competitors do not see. The Steel example is used here but the leakage issue can be applied to any EITE manufacturer.

Assuming the Clean Power Plan is upheld in the courts, New Jersey should request a 2-year extension for filing a State Plan. This will provide additional time to complete modeling, engage with stakeholders and develop rules to ensure the Climate Policies of the State are upheld. New Jersey should consider both mass-based and rate-based options to achieve the lowest cost outcome for ratepayers.

The final submission should be based on extensive modeling. This modeling must be thorough and consider: the effect of CO_2 allowances on the marginal price of power and the flow of inframarginal revenues to non-carbon emitters; how allowances should be allocated to achieve the lowest cost; costs of infrastructure upgrades, including natural gas pipelines and transmission to accommodate renewables; trading allowances with other jurisdictions; and PJM’s modeling results.

Electricity Consumers will pay for this rule, each pillar; re-dispatch of natural gas, coal efficiency improvements and new renewables & the associated transmission. New Jersey needs to give adequate consideration to the cost and timing of infrastructure changes that will be needed to accommodate the increase in Natural Gas Combined Cycle capacity and the additional renewable generation envisioned in the Final Rule. Natural gas facilities rely on real-time delivery of natural gas through pipelines. So do the current users of natural gas including homeowners, commercial customers and process heating loads. New pipelines will need to be built to satisfy this increase in demand in all the northeast States. These new pipelines don’t get built over night and can take many years for permitting and approvals. In fact, we all know too well the impacts that an over-reliance on gas had during the first quarter of 2014. This risk will only increase going forward. To this note and due to the complexities of planning, costs, and reliability issues, the New Jersey Board of Public Utilities must maintain a strong presence during the development and implementation of a State Implementation Plan.

In summary, several points for consideration:

Leakage – Energy Intensive Trade Exposed consumers of electricity are extremely concerned about the cost and reliability impacts that this rule may impose on business and competitiveness. If a SIP is implemented without holding our offshore competition to the same standards, there will be a lose - lose for the environment and the economy. Leakage can be mitigated in a number of different ways; free allowances (or ERCs) could be allocated to EITE ratepayers, cost increases could be accounted for in the rate-making process, auction revenue recycling to those most vulnerable, etc. Other jurisdictions have addressed the EITE issue including California, selected EU countries, Waxman-Markey (2009), and Australia.

Reliability and Cost – BPU oversight must be retained during the development of a SIP and preserved during the implementation process

Starting Blocks: NJ Clean Power Plan State Implementation Plan As Vehicle for Global Warming Response Act Compliance & the Promise of a Stronger Regional Greenhouse Gas Initiative Program

Doug O'Malley, Director, Environment New Jersey

As Northeast states grapple with how to comply (and exceed) the state requirements for their Clean Power Plan State Implementation Plan, it is beneficial to examine what emissions models plot for carbon emissions without the EPA plan, the roads taken by neighboring states, how New Jersey should use the Clean Power Plan State Implementation Plan process as a floor for compliance with the carbon reductions required through the Global Warming Response Act and examine the potential for a re-entry into the Regional Greenhouse Gas Initiative (RGGI) as dual compliance strategies.

EPA modeling shows that continuing under existing policy, New Jersey's power plant carbon dioxide emissions will increase by more than 50 percent from 2012 levels by 2030. In contrast, under the Clean Power Plan, the state's emissions would have to decrease by roughly a quarter below 2012 levels by 2030. The difference between those two scenarios represents a cut in emissions of more than 60 percent below business-as-usual levels. (See Figure 2.) Significant action will be required.

This, coupled with a 14% increase in carbon emissions in 2014, including 17 million metric tons of carbon from power plants, (which was an increase of 17% from the sector), clearly shows the importance of moving to reduce carbon emissions from our power plants.

New Jersey, like our neighboring states, has a stringent 2050 carbon pollution reduction mandate of 80% (although most other Northeastern states use a base year of 1990). Other states have been taking additional measures to ensure compliance. New York State, both through their Reforming Energy Vision and with Gov. Cuomo's aggressive announcement to increase their Renewable

Portfolio Standard (RPS) to 50% renewable energy by 2030. Maryland, under Gov. Hogan, just signed into law the Greenhouse Gas Reduction Act of 2016 (SB 323) into law, will require Maryland to reduce carbon emission economy-wide by 40% below 2006 levels by 2030, which is a critical benchmark ahead of the 90% reduction by 2050. (Many of the RGGI states have 2030 GHG reduction targets in addition to their 2050 targets. The 2015 New York State Energy Plan calls for a 40% reduction in emissions by 2030, while the governors of the six New England states, in conjunction with the premiers of the Eastern Canadian provinces, recently agreed to reductions of 35% -45% by 2030.)

Rejoining RGGI is a commonsense, administratively efficient pathway for New Jersey (and other states) to comply. The infrastructure of the program is already developed, New Jersey has a history of participation and its utilities are familiar with the program, and it generates revenue that the state can use to accelerate its transition to clean energy and make the goals of the Clean Power Plan easier to achieve.

Overall, neighboring states have generated more than $1.5 billion in revenues through RGGI, which they are largely using to advance clean energy solutions, $2.7 billion in net economic benefits has been created and regional electric prices have decreased by 2% and power sector emissions have dropped by 35%. Every RGGI dollar that states put into energy efficiency programs delivers more than $2 dollars in benefits, in addition to reducing carbon pollution – making the program a clear win-win.

Participating states, under current plans, will reap an additional $3 billion in funding – and an $8 billion boost to the regional economy – through 2020, according to the Acadia Center. New Jersey is missing out on this opportunity by sitting on the sidelines. It should be noted that carbon emissions from 2009 - 2012 were 19% lower than they would have been without RGGI, accounting for a larger share of emissions reductions than the economic downturn or increased generation from natural gas. (Nicholas Institute, Duke University, 2015)

The RGGI program is currently undergoing its quadrennial program review, with a schedule of stakeholder meetings, and ideally a revised stronger plan issued by the end of the year that extends the carbon emissions cap through 2030, aligns the RGGI cap with the 2050 long-term carbon caps with a trajectory for 90% reductions from the power plant emissions by 2050. It should be noted that six of the nine governors who participate in RGGI (NY, CT, MA, NH, RI, VT) have signed onto an agreement (called the Under 2 MOU) committing to reduce pollution in line with the Paris Climate Agreement, which New Jersey should investigate joining.

This should be aligned with efforts to move towards a 100% renewable energy future, which has already seen traction with a successful effort in the State Senate to pass legislation to achieve an 80% renewable energy requirement in New Jersey by 2050. Legislative action, coupled with innovation in the renewable energy sector, especially solar and battery technology, gives credence to the Rocky Mountain Institute's *Economics of Load Defection* report, which documents the upcoming deep penetration of renewables as part of the electric grid.

The State Implementation Plan should also not be blind to the very real hazards of environmental injustice, to ensure that the state's communities that are home to people of color and those near,

at or below the poverty line don't suffer increased co-pollutant air pollution, and ensure meaningful actual on-site reductions in both carbon and co-pollutant emissions. Specifically, the state should adopt usage of the proposed Clean Energy Incentive Program, incentivize clean energy and energy efficient programs located in EJ neighborhoods with specific carve-outs (a majority of which should be energy efficiency) and ensure that facilities aren't able to use the CEIP to dodge emissions reduction requirements in EJ communities.

The Clean Power Plan and Emissions Reductions in Environmental Justice Communities

Nicky Sheats, Esq., Ph.D., Director, John S. Watson Institute for Public Policy, Center for the Urban Environment, Thomas Edison State University

While the environmental justice (EJ) community supports an aggressive fight against climate change it also believes that equity should be an integral part of climate change mitigation policy. In the case of the Clean Power Plan equity would mean, in part, the inclusion of a mechanism to ensure emissions reductions from facilities located in EJ communities. This would benefit these communities because emissions of GHG co-pollutants that have a detrimental local health impact would be reduced along with emissions of GHGs. In its current form the Clean Power Plan contains no such mechanism and therefore does not guaranty emissions reductions in the communities with the most pollution. This presentation will argue that New Jersey, and all other states, should include a mechanism in its state plan developed pursuant to the Clean Power Plan that ensures emissions reductions in the state's EJ communities. A specific mechanism will be suggested as a means to, at the very least, initiate discussion on this topic.